ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

September 30, 1958
Vol. 20...No. 4

Dear Sir:

The 18 uranium processing mills in the western U.S. were treating a total of 15,700 tons of ore per day by June 30, 1958, with the ore averaging 0.26% uranium oxide, according to latest official figures just released. This daily average had risen from a rate of 10,900 tons of ore per day in January, 1958. Uranium ore reserves on June 30, 1958 were placed at 78,500,000 tons for the U.S., averaging 0.27% uranium oxide. Largest reserves are in New Mexico (52,800,000 tons) followed by Wyoming (11,100,000 tons); Utah (5,100,000 tons); Colorado (3,700,000 tons); Arizona (1,400,000 tons); Washington, Oregon, Nevada (2,000,000 tons); N. and S. Dakota (600,000 tons); Texas, California, Montana, Idaho, Alaska (1,800,000 tons).

To enable expanded reactor production, construction is underway by Aerojet-General Nucleonics on addition to its facilities at San Ramon, Calif. The 18,000 sq. ft. of plant space being added will bring total built up space at the company's 500 acre site to 78,000 sq. ft. The firm is a subsidiary of Aerojet-General Corp., which in turn is owned by General Tire & Rubber Co. (Other MANUFACTURERS' NEWS, p.3 this LETTER.)

Now in operation at Oak Ridge is USAEC's new multicurie fission products pilot plant for separation, purification, and fabrication of kilocurie quantities of such isotope as cesium-137; promethium-147; cerium-144; strontium-90; and technetium-99. Feed for the plant will include waste solutions resulting from the recovery of plutonium and unused uranium from used reactor fuels. Designed by the McPherson Company, Greenville, S.C., the plant was built by Malan Construction Corp., New York. Major process equipment was installed by H. K. Ferguson Co. A two story building, 62x123-ft., contains 18 hot cells in which the various processes are carried out. Total cost was about $2,200,000. (Other PRODUCT NEWS, p.3 this LETTER.)

Under recent agreement between Canada and Switzerland, some 11-tons of uranium fuel elements will be fabricated in the Dominion for an experimental Swiss reactor. Order was placed following bilaterial agreement made by the two countries for cooperation on atomic energy matters. Shipment of the elements is expected to be made within 6-months. (Other BUSINESS NEWS OUTSIDE THE U.S., p.2 this LETTER.)

Budget of $608,000 has been established for fiscal 1959 for the division of radiological health of the Public Health Service; the division has been active only since July 1, 1958, although the PHS had concerned itself with ionizing radiation for some years previous. It has set up 43 stations in the States and Territories for measurement of radioactivity in the air, 45 stations for testing water, and 9 milk sampling points. Samples are analyzed once monthly. (Other RADIATION NEWS, p.3 this LETTER.)

Twenty-four technical sessions will feature the Dec. 8-10 meeting in Detroit of the American Nuclear Society. Approximately 175 papers will be delivered covering various phases of nuclear science and technology including the development of nuclear rocket motors. (Other MEETINGS, COURSES, CONFERENCES, p.4 this LETTER.)

Copyright, Atomic Energy Newsletter. All rights reserved.

ATOMIC ENERGY CONTRACT NEWS...

PROPOSALS ASKED:- Bids have been asked by USAEC's Hanford Operations office, Richland, Washington, for construction of extensive Phase III plutonium test reactor facilities at Hanford Works. The bids are returnable October 29, 1958.

Proposals for doing preliminary design and engineering studies and cost estimates on three nuclear power plant concepts of proven technology have been invited by the USAEC's division of reactor development, Wash. 25, D. C. These concepts are boiling water, pressurized water, and organic cooled reactors. Purpose of the studies is to determine which reactor concept is most economical for power station use. Separate cost-plus-fixed-fee contracts will be awarded for each study. Deadline for proposals is Oct. 15, 1958. Reports on the first phase of the work by the successful contractors must be submitted by March 23, 1959. (The Commission is required to report to the Joint Congressional Committee on Atomic Energy by May 1, 1959 on the initial results of the surveys.)

Proposals have been asked by the USAEC for development, design, construction and operation in the U.S. of a gas-cooled, graphite-moderated, nuclear power plant large enough to be an effective prototype for a future full-scale power plant of similar design. The Commission will furnish those interested in making such bids with its own gas-cooled power reactor designs, although use of such plans is not mandatory. Proposals will be judged on basis of project's ability to demonstrate the technical and economic feasibility of large-scale power plants using such designs; cost to the Commission in money, materials and services; and technical and financial competence of the proposer. Dec. 22, 1958 is bid deadline. Full details, including assistance the Commission will offer, and criteria it will apply, may be obtained from USAEC's division of reactor development, Wash. 25, D.C.

CONTRACTS AWARDED:- Some 72 non-secret physical research contracts totaling $3,052,513 were recently awarded to U.S. universities and private research institutions by the USAEC. Eleven of the contracts were new; 61 were renewals. Largest of the group were awards of $354,314 to University of Notre Dame for studies in radiation chemistry and $286,741 to University of Minnesota for research using the physics department's 68 mev linear accelerator.

Life science research contracts covering fields of medicine, biology, environmental sciences, radiation instrumentation, and special training, have now been awarded U.S. universities and private institutions by the USAEC. Totaling 102, they included 74 renewals and balance new awards with 34 in the field of medicine; 45 in biology; 19 in environmental sciences; 1 in radiation instrumentation; and 3 in special training.

ATOMIC ENERGY BUSINESS NEWS...outside the U.S. ...

BELGIUM:- New company, Metallurgie et Mechaniques Nucleaires, has been set up with initial capital of Fr. 100 million to handle nuclear metallurgical work. Organizing firms are the Belgian companies Metallurgique de Hoboken and the Fabrique Nationale d'Armes de Guerre (FN) which have pooled their nuclear interests. Original experience of Metallurgique de Hoboken was with radium; more recently the company has developed its own processes for producing reactor grade uranium and salts. Its alliance with FN is to develop and produce nuclear fuel elements and associated reactor materials.

GREAT BRITAIN:- Nuclear Chemical Plant Ltd., is new joint company established by the British chemical engineering firms of John Thompson, Ltd.; the Power-Gas Corporation; and Humphreys and Glasgow, Ltd. The company has been formed to supply nuclear energy organizations outside the U.K. with plants for processing uranium ores and recovering spent fuels. The new firm will draw upon the engineering experience of the U. K. Atomic Energy Authority's new plant at Windscale for conversion of uranium ore into metallic and ceramic fuel elements.

Ten year agreement for the production and supply of the isotope boron-10 has been made between the U. K. Atomic Energy Authority and 20th Century Electronics, New Addington, Croydon. The low temperature distillation plant for producing boron-10 has been moved from the Authority's Capenhurst site to New Addington.

HOLLAND:- Agreement has been made between Reactor Centrum Nederland (this country's atomic energy board) and fifty Dutch firms under which the companies will contribute a specified sum to the joint undertaking and will have the right to use its research experience and patented inventions. The companies in the undertaking are in chemical, metallurgical, industrial, shipping, and electrical fields.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS FROM MANUFACTURERS:- Radioactive gases mixed with other gases, or gas mixtures, are now offered by this producer. The gas mixtures are available with krypton-85 and gaseous carbon-14, tritium, and sulfur-35 compounds.--Matheson Co., Inc., E. Rutherford, N.J.

New superscaler, Model SC-18B, is first of an all new line being offered by this manufacturer. With a single control which may be set for either present time or present count, the instrument can be set for both, simultaneously, with the first to expire shutting off the scaler.--Tracerlab, Inc., Waltham 54, Mass.

PRODUCT NEWS:- National Bureau of Standards, Washington, has stopped distributing radioactivity standard samples of longer lived radioisotopes as they are now commercially available from Nuclear-Chicago Corp., 223 W. Erie St., Chicago 10. These standardized samples include radium D plus radium E; cobalt-60; strontium-90/yttrium-90; thallium-204; sulfur-35; cesium-137/barium-137; tantalum-182; and iron-59. As furnished by Nuclear-Chicago, the standards will be derived from comparisons made with the national standards maintained by the Bureau.

PRODUCT DEVELOPMENT:- Training and research reactor, said to be considerably lower in cost than other similar 1-kw reactors, and embodying safety features, has been designed by Vitro Engineering division of Vitro Corp. of America, New York. At temperature of 65 deg. F., the core goes critical. Design is such that should failure of any type occur, the reactor will absorb heat from its surroundings and its own heat of fission and go subcritical. Safe operation is thus made possible without use of control rods or electronic instrumentation.

The possible value of alkoxyglycerols as a protection against leuko- or thrombocytopenia resulting from irradiation treatment and leukemia chemotherapy has been suggested by Astrid Brohult, of Radiumhemmet, Stockholm, Sweden. Dr. Brohult studied effect on rats six days after they had been given total body irradiation of 250 roentgens. She believes that a reduction in radiation toxicity may be achieved, although some difficulties have been encountered with dosage. The report appears in Nature, 181:1484, 1958.

MANUFACTURERS' NEWS:- Heavy water moderated and reflected training and research reactors will be manufactured and sold by Nuclear Development Corp. of America, White Plains, N.Y., according to company plans. A 5 watt prototype is being built by the company at its remote experimental station, Pawling, N.Y., with completion expected by Nov. 30, 1958. Universities, medical centers and other research institutions are potential markets for the reactor, the firm believes.

A 20 mev microwave linear accelerator has been sold by High Voltage Engineering Corp., Burlington, Mass., to the Atomic Energy Research Institute, Tookaimura, Japan. A program of research using the machine has been set up by the Institute, and includes work on properties of radioisotopes; food and drug sterilization; and cancer therapy.

Arrangements have been made by Tracerlab, Inc., Waltham, Mass. to have RCA Victor Co., Ltd., Montreal, Canada, distribute and service Keleket X-ray apparatus in Canada. Keleket is the x-ray manufacturing firm (originally known as Kelley-Koett, and located in Covington, Ky.) bought several years ago by Tracerlab and whose manufacturing facilities are now merged with Tracerlab at its Waltham plant. The RCA arrangement, on an exclusive basis, will, it is hoped by the firm, materially bolster sales of Keleket.

RADIATION NOTES:- Tests for the presence of radioactivity in milk from the nine U.S. sampling points maintained by the Public Health Service (page 1, this LETTER) show amounts within the permissible levels of the National Committee on Radiation Protection and Measurement, according to PHS reports of May, June and July, 1958. Levels of strontium-90 in the various milksheds in the May samples ranged from 3.3 to 10.0 micromicrocuries per liter as compared with the permissible limit of 80.0 uuc/liter. June samples showed 2.2 to 15.6 uuc/liter, while July samples were from 3.3 to 18.7 uuc/liter.

MANUFACTURERS' LITERATURE:- A 52-page "Manual of Nuclear Instrumentation" has been prepared and may be obtained from Radiation Counter Laboratories, Inc., Skokie, Ill. It should be useful as a training manual for nuclear instrument use in fields of medicine, research, etc. Single copies of the book are free to nuclear instrumentation users; additional copies are $2 each.

Brochure describing its film badge service has been issued by St. John X-Ray Laboratory, Califon, N.J.

MEETINGS, COURSES, CONFERENCES...

CONFERENCES:- Conference to review the USAEC's gas-cooled power reactor program (pge. 2 this LETTER: proposals on gas-cooled reactor asked) is scheduled for Oct. 21-22, 1958, at Oak Ridge National Laboratory. Program includes design and development of five gas-cooled reactor types: graphite moderated, pebble bed, heavy water-moderated; high temperature process heat; and maritime propulsion reactors. Speakers will be from Kaiser Engineers; ACF Industries; General Electric; Oak Ridge National Laboratory; General Nuclear Engineering Co.; Sanderson & Porter; General Atomic division of General Dynamics Corp.; and Bureau of Mines.

At its second session in Vienna now underway, the General Conference of the International Atomic Energy Agency elected Dr. T. Sudjarwo, Indonesia, as president, and heard proposal by John A. McCone, U.S. delegate and Chairman of the USAEC that the U.S. would subsidize research projects in the nuclear field. The projects would be assigned by the U.S. to the IAEA which in turn would allot them on contract basis to scientific teams throughout the world. All costs would be borne by the U.S. Suggested projects by Mr. McCone included research into high-temperature metallurgy; methods of using radioisotopes in agriculture; development of ceramic fuel elements; and metabolic processes of the human body. W. Sterling Cole, of the U.S., is director-general of the IAEA; this current session has some 400 delegates in attendance from sixty-nine nations.

COURSES:- New series of radioisotope technique courses to be given at Oak Ridge by the USAEC are especially designed for industry people. Of six weeks duration, two courses have been initially scheduled: first to start Feb. 9, 1959 and second to start April 6, 1959. To be given by Oak Ridge Institute of Nuclear Studies, the new courses will differ from those given previously on basic techniques of using radioisotopes, and will be aimed entirely at practicing industrial scientists and engineers.

ATOMIC ENERGY FINANCIAL NEWS...

DEFICIT SHOWN BY INSTRUMENT MANUFACTURER:- Net loss of $946,000 in fiscal 1958, ended June 30, 1958 was shown by Beckman Instruments, Inc., according to A. O. Beckman, president. The company manufactures industrial apparatus and devices, including nuclear instruments. The 1958 loss compares with net profit of $209,432 for fiscal 1957 on sales of $38 million. Fiscal 1958 sales had been $39.8 million. Dr. Beckman said the loss for the full year was due to inventory adjustments, and other non-recurring costs. He stated that four of the company's six divisions are now in the black.

NUCLEAR DIVISION SHOWS GAINS:- Patterson, Moos division of Universal Winding Co. has enlarged its backlog and level of activity over the past three months, Robert Leeson, Universal Winding president told stockholders in his annual report. Mr. Leeson reported that the parent company had net income of $68,594 for the fiscal year ended June 30, 1958 on total net sales of $14,412,472. Patterson, Moos, which has developed and sells many devices for nuclear work has licensed Mine Safety Appliances Co. on a royalty basis for the manufacture of certain of its equipment. Mr. Leeson said Mine Safety plans to have equipment embodying Patterson, Moos developments on the market within a year.

CHANGES IN STOCKHOLDINGS SHOWN:- Changes in stockholdings recently made by officers or large stockholders in nuclear firms, and reported to the SEC, include purchase of 10,000 shares of Nuclear Corp. of America by Engelhard Industries, Inc., increasing that firm's holdings of Nuclear shares to 1,604,300 shares..... Sale of 3,785 shares of Northspan Uranium Mines, Ltd., was made by John B. Aird, director, decreasing his direct holdings to 5,500 shares.

SALES OF URANIUM MINING FIRM IS CANCELLED:- Proposed acquisition of Vitro Minerals Corp. by Susquehanna Corp. has been called off by Rochester and Pittsburgh Coal Co., and Vitro Corp. of America, which jointly own Vitro Minerals. Approved by directors of the firms, a dissident stockholders group headed by J. Patrick Lannan had been formed to dispute the contemplated purchase. In rejecting the proposed acquisition, Vitro Corp. of America and Rochester & Pittsburgh Coal Co. said ..."We did not anticipate the dissension that has arisen.....and under the circumstances prefer not to become shareholders in Susquehanna."

ATOMIC ENERGY PATENT DIGEST...

ISSUED September 16th, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Ionization chamber. H. S. McCreary, Jr., inventor. No. 2,852,694 assigned to Westinghouse Electric Corp., E. Pittsburgh, Pa. (2) Radiation dosimeter. G. A. Argabrite, inventor. No. 2,852,695 assigned to Pacific Transducer Corp., Los Angeles, Calif. (3) Apparatus for investigating earth formations. F. J. Johnson, inventor. No. 2,852,696 assigned to Schlumberger Well Surveying Corp., Houston, Texas.

ISSUED September 16th, 1958 to GOVERNMENT ORGANIZATIONS:- (1) Slug handling device. J. G. Ross, inventor. No. 2,852,301 assigned to USAEC. (2) Metallic coatings on uranium and method of applying. A. G. Gray, inventor. No. 2,851,766 assigned to USAEC. (3) Thrust bearing. P. R. Heller, inventor. No. 2,852,319 assigned to USAEC. (4) Peroxide process for separation of radioactive materials. G. T. Seaborg, I. Perlman, inventors. No. 2,852,336 assigned to USAEC. (5) Processes of chlorination of uranium oxides. S. Rosenfeld, inventor. No. 2,852,337 assigned to USAEC. (6) Separation of plutonium. F. T. Fitch, D. S. Russell, inventors. No. 2,852,338 assigned to USAEC. (7) Apparatus for liquid phase extraction. T. E. Hicks, H. R. Lehman, B. Rubin, inventors. No. 2,852,349 assigned to USAEC. (8) Melting and purification of uranium. F. H. Spedding, C. F. Gray, inventors. No. 2,852,364 assigned to USAEC. (9) Process of decontaminating material contaminated with radioactivity. D. C. Overholt, M. D. Peterson, M. F. Acken, inventors. No. 2,852,419 assigned to USAEC. (10) Nuclear reactor. E. J. Wade, inventor. No. 2,852,456 assigned to USAEC. (11) Nuclear reactors. E. Long, J. W. Ashley, inventors. No. 2,852,457 assigned to USAEC. (12) Apparatus for controlling nuclear reactors. J. R. Dietrich, J. M. Harrer, inventors. No. 2,852,458 assigned to USAEC. (13) Apparatus for detecting and locating presence of fluids. R. R. Williamson, inventor. No. 2,852,459 assigned to USAEC. (14) Fuel-breeder fuel element for nuclear reactor. W. E. Abbott, R. Balent, inventors. No. 2,852,460 assigned to USAEC. (15) Nuclear reactor. E. Fermi, W. H. Zinn, H. L. Anderson, inventors. No. 2,852,461 assigned to USAEC. (16) Ion source for calutrons. J. R. Tolmie, inventor. No. 2,852,685 assigned to USAEC. (17) Calutron receivers. K. R. MacKenzie, inventor. No. 2,852,686 assigned to USAEC. (18) Isotope separating apparatus. M. K. Kudravetz, H. B. Greene, inventors. No. 2,852,687 assigned to USAEC. (19) Calutrons. W. M. Pierson, inventor. No. 2,852,688 assigned to USAEC. (20) Ion producing mechanism. E. O. Lawrence, inventor. No. 2,852,689 assigned to USAEC. (21) Calutrons. E. O. Lawrence, inventor. No. 2,852,690 assigned to USAEC. (22) Voltage controlled transistor oscillator. P. F. Scheele, inventor. No. 2,852,746 assigned to USAEC.

ISSUED September 23, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Focusing crystal for x-rays and method of manufacture. D. W. Berreman, inventor. No. 2,853,617 assigned to California Institute Research Foundation. (2) Radiation detection phosphor. R. C. Fox, W. S. Lusby, inventors. No. 2,853,620 assigned to Westinghouse Electric Corp., E. Pittsburgh, Pa.

NEW BOOKS & OTHER PUBLICATIONS...

Flavor and Chemical Changes in Foods During Radiation Sterilization. Work at Southern Research Institute, by R. E. Burks, Jr. No. PB-1328521. (Microfilm: $2.70; Photostat: $4.80.) ..... Effects of Radiations on Structure of Fruits and Vegetables. Work at Cornell University by Z. I. Kertesz. No. PB-133437. (Microfilm: $1.80; Photostat $1.80). --Library of Congress, Washington 25, D.C.

Lead Screens to Improve Industrial Radiographic Inspection Methods. Investigation by C. Grogan, M. G. Keefe, and C. A. Penrose, U.S. Arsenal, Watervliet, N.Y. No. PB-131537. --Office of Technical Services, Washington 25, D.C.

NOTES:- English translation of the Russian book, Application of Atomic Engines in Aviation, is available from Office of Technical Services under number PB-131908T. Price is $3.00. Also available from that organization is list of the more than 600 U.S. technical papers presented at the recent Geneva Conference and available singly or in groups. Price of the list is 25¢.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

September 30, 1958